

Architecture 100

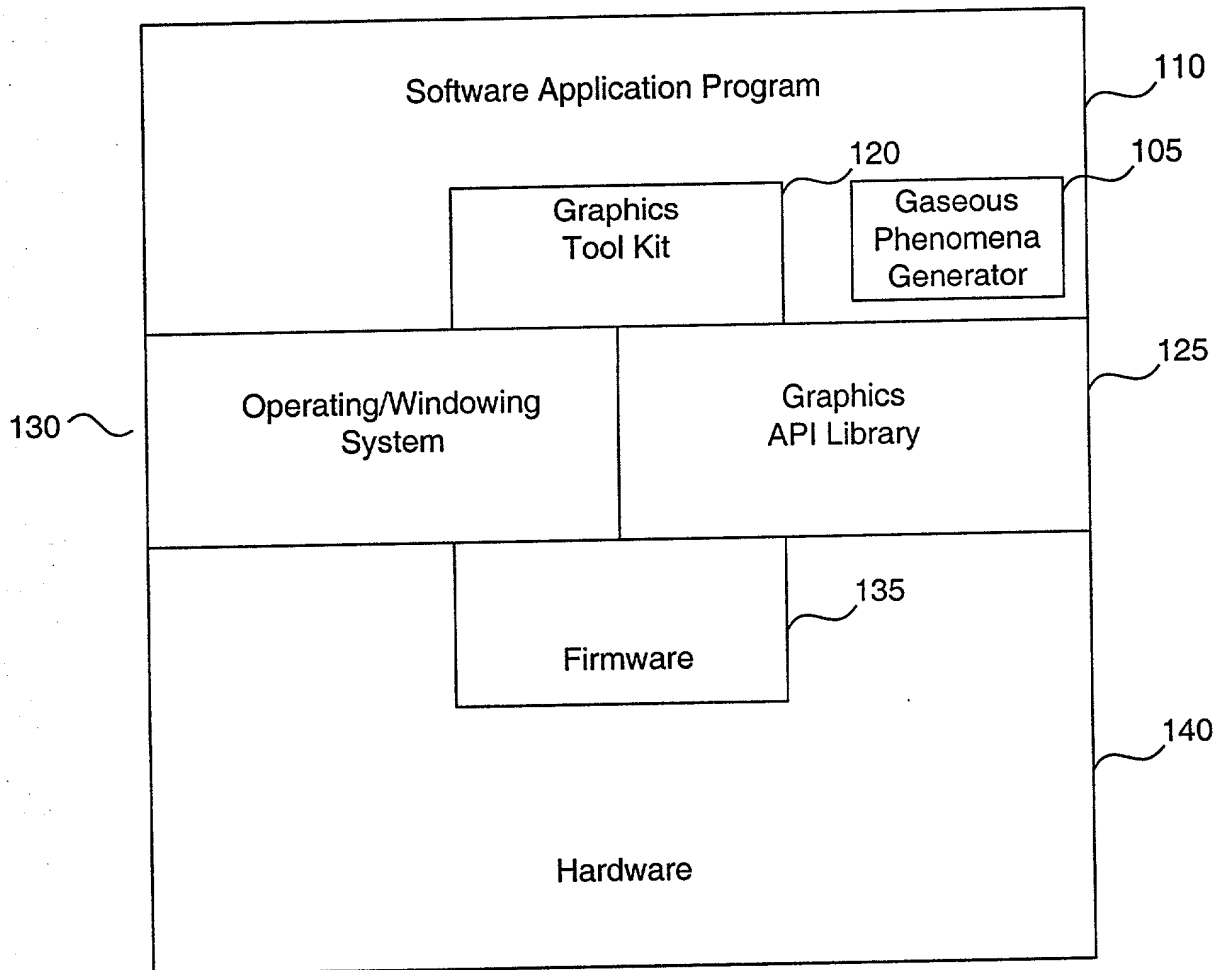
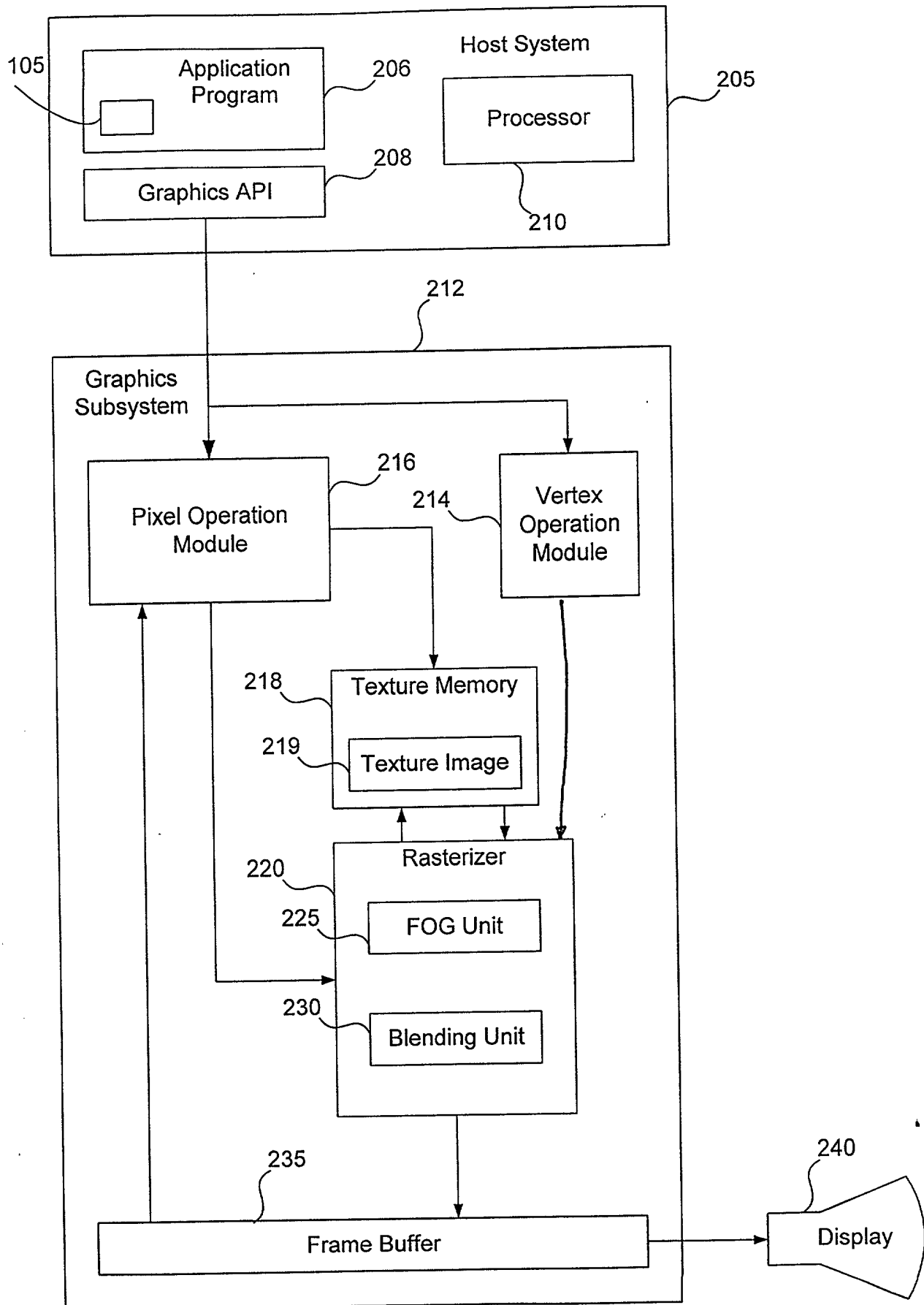


FIG. 1



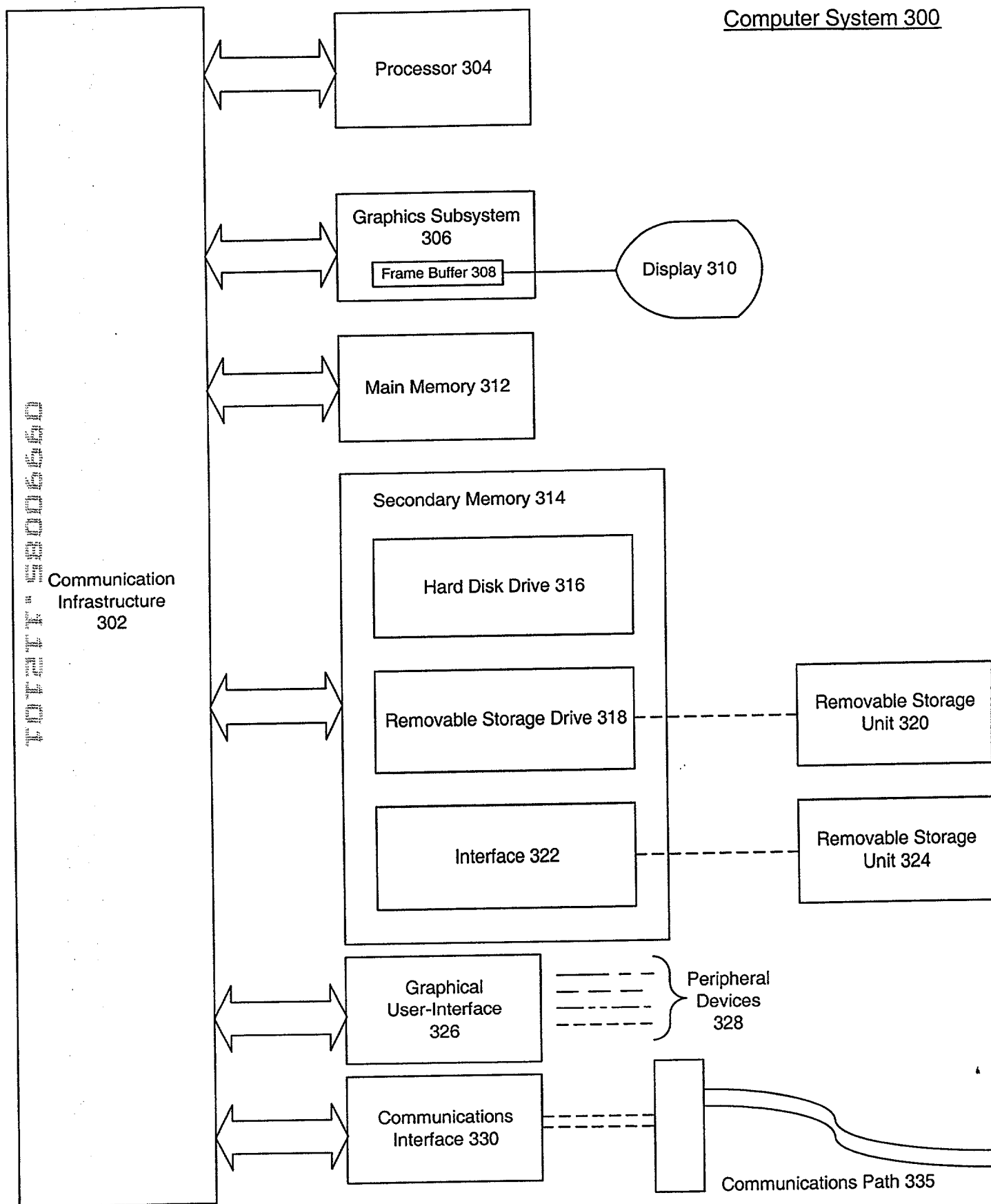


FIG. 3

**Routine For Rendering Volumetric Fog
or Other Gaseous Phenomena**

400

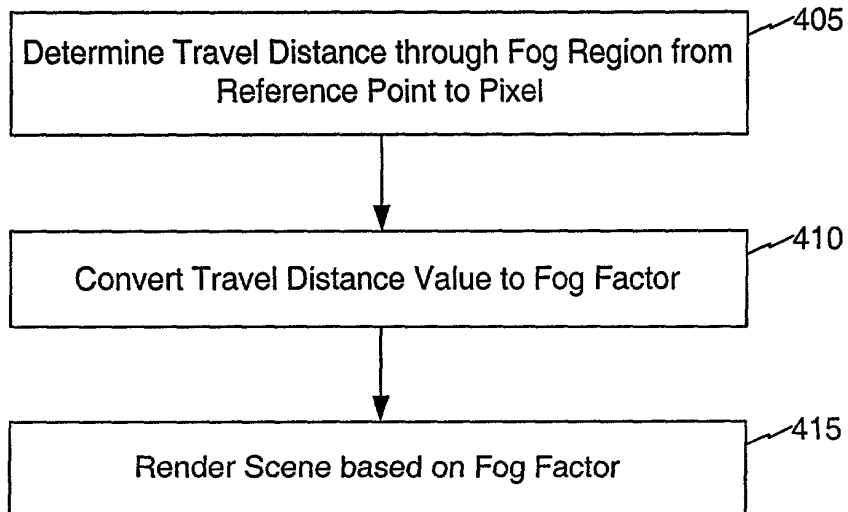


FIG. 4

**Determine Travel Distance through Fog Region
from Reference Point to Pixel**

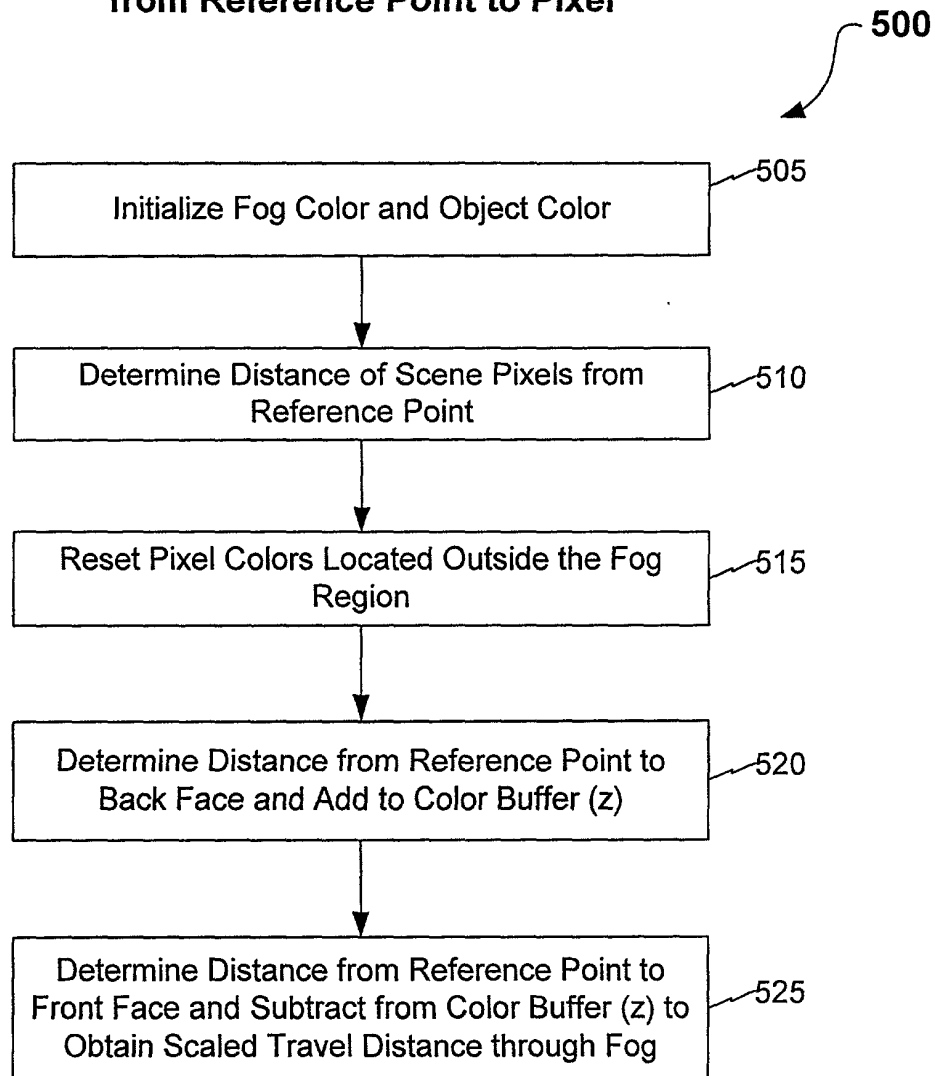


FIG. 5

**Determine Distance of Scene Pixels From
Reference Point**

600

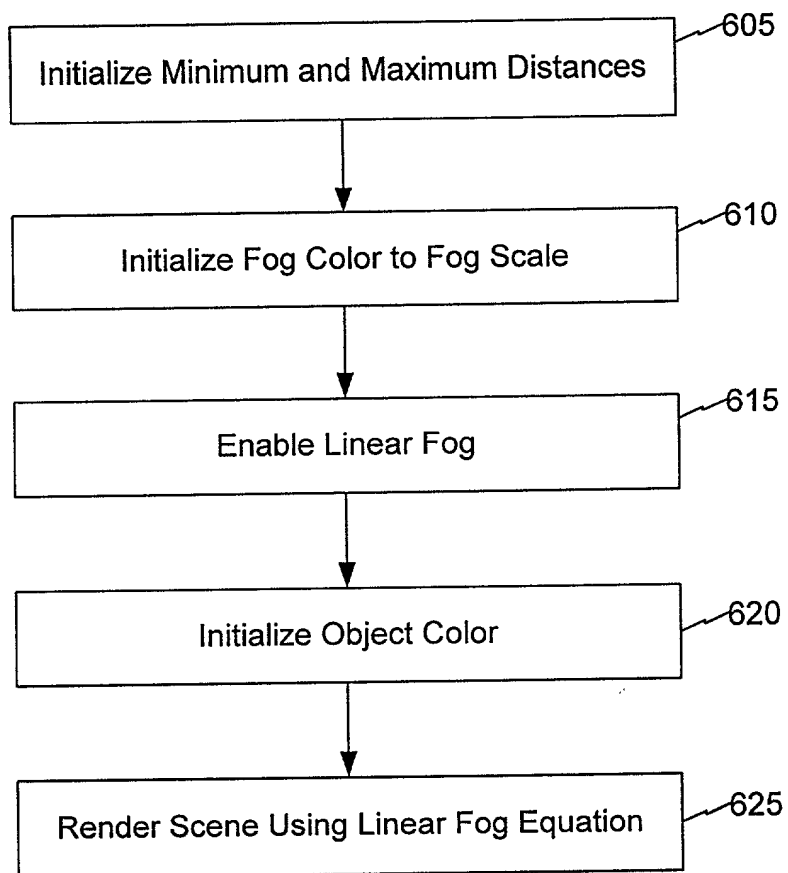


FIG. 6

Linear Fog Equation

Equation One (1)

$$\text{Attenuation Factor}(f) = \frac{\text{Maximum Distance} - \text{Pixel Distance}}{\text{Maximum Distance} - \text{Minimum Distance}}$$

Equation Two (2)

$$\text{Color} = f \cdot \text{Object Color} + (1-f) \cdot \text{Fog Color}$$

Equation Three (3)

$$\text{Color} = \frac{\text{Pixel Distance} - \text{Minimum Distance}}{\text{Maximum Distance} - \text{Minimum Distance}} \cdot \text{Fog Scale}$$

FIG. 7

Reset Pixel Colors Located Outside the Fog Region

800

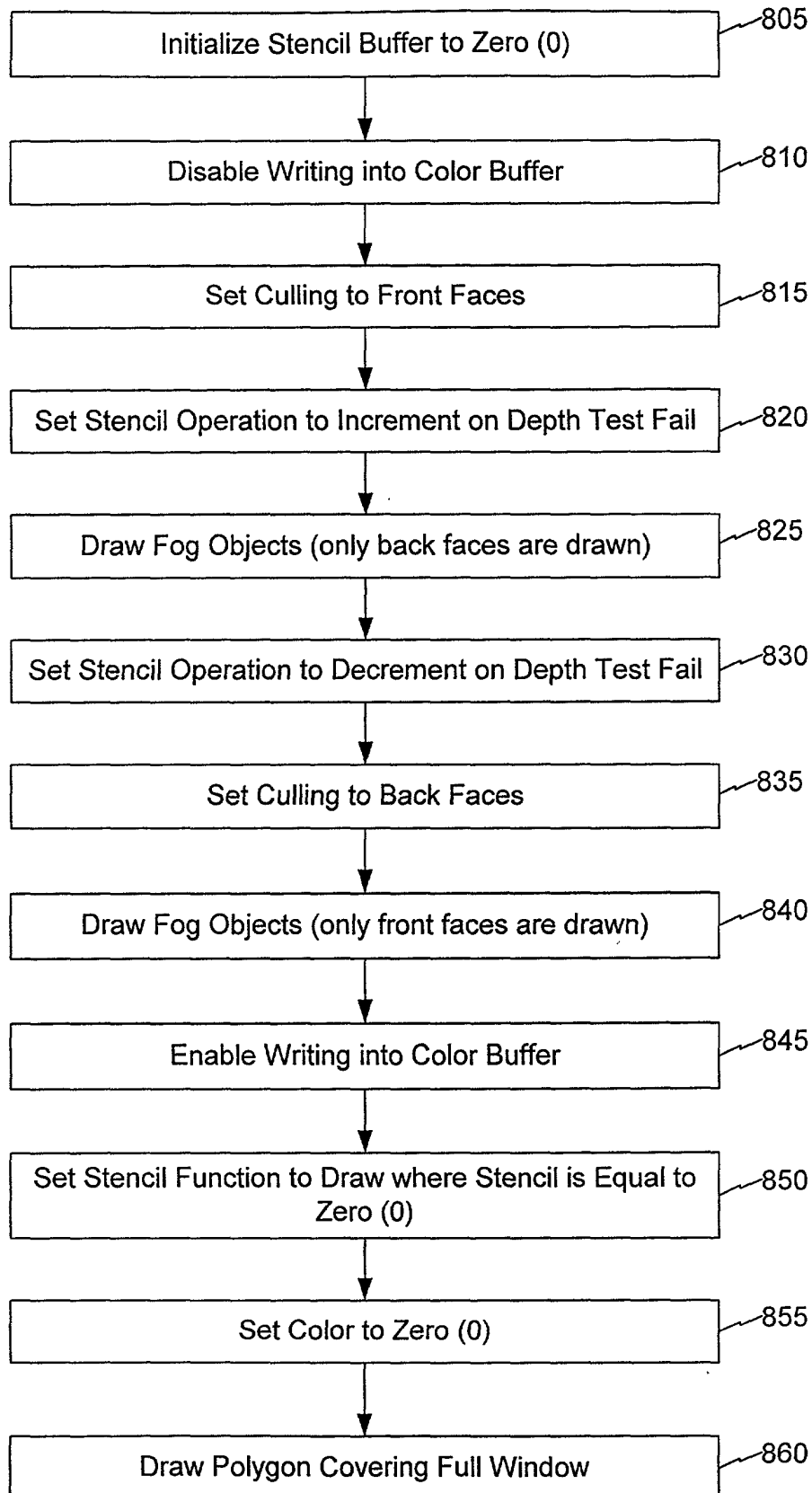


FIG. 8

**Determine Travel Distance through Fog Region
from Reference Point to Pixel**

900

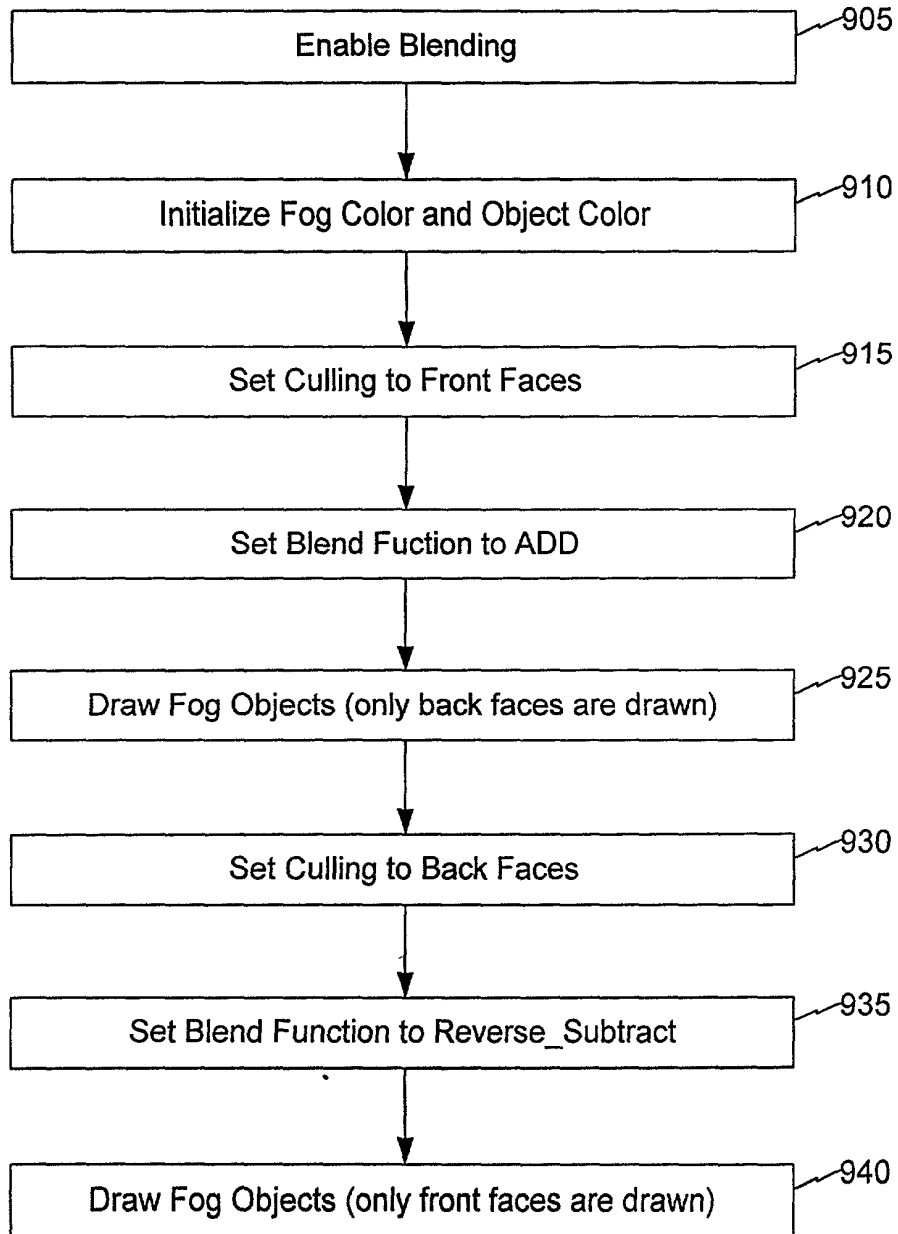


FIG. 9

Render Scene Based on Fog Factor

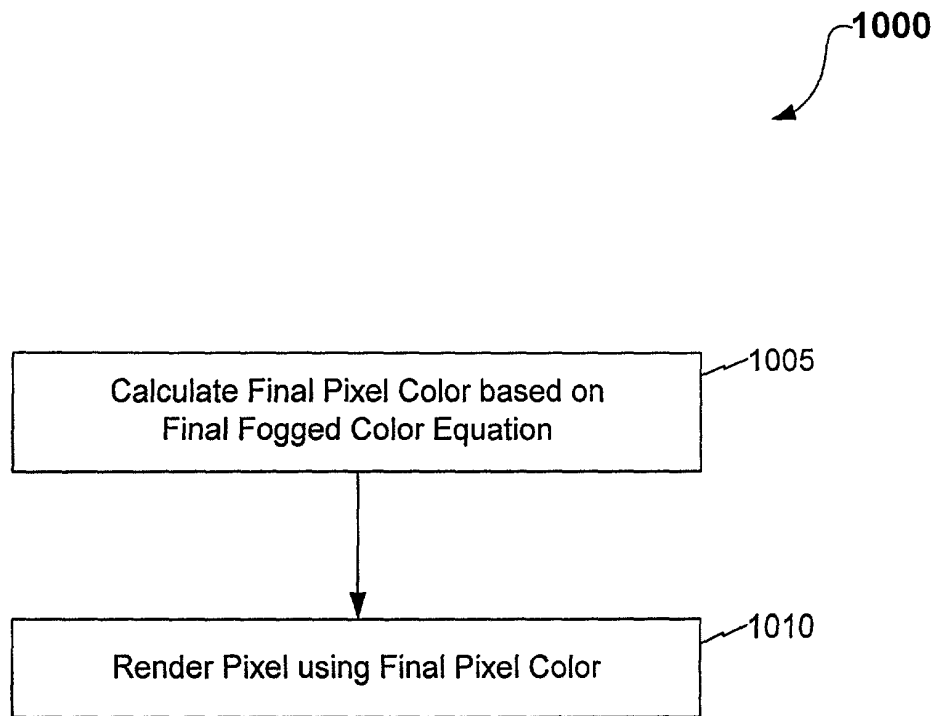


FIG. 10

Final Fogged Color Equation

Unfogged pixel color • fog factor + fog color • (1 - fog factor)

FIG. 11

**Render Scene Based
on Fog Factor**

1200

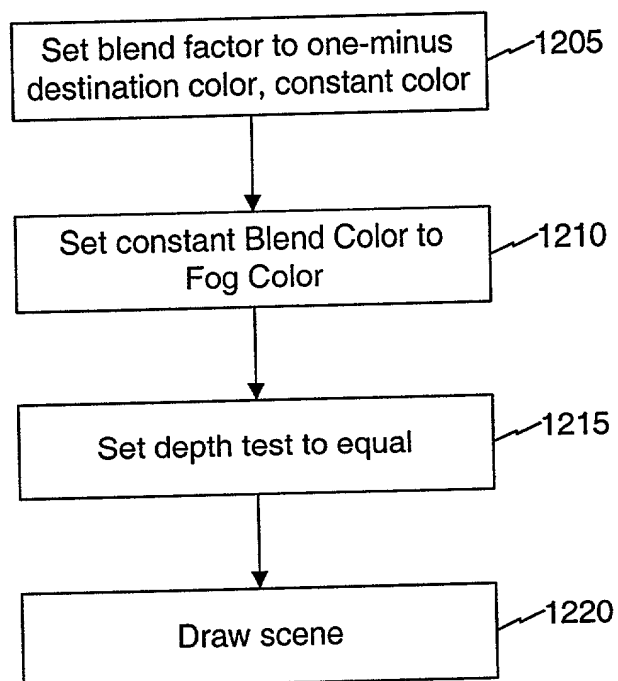


FIG. 12

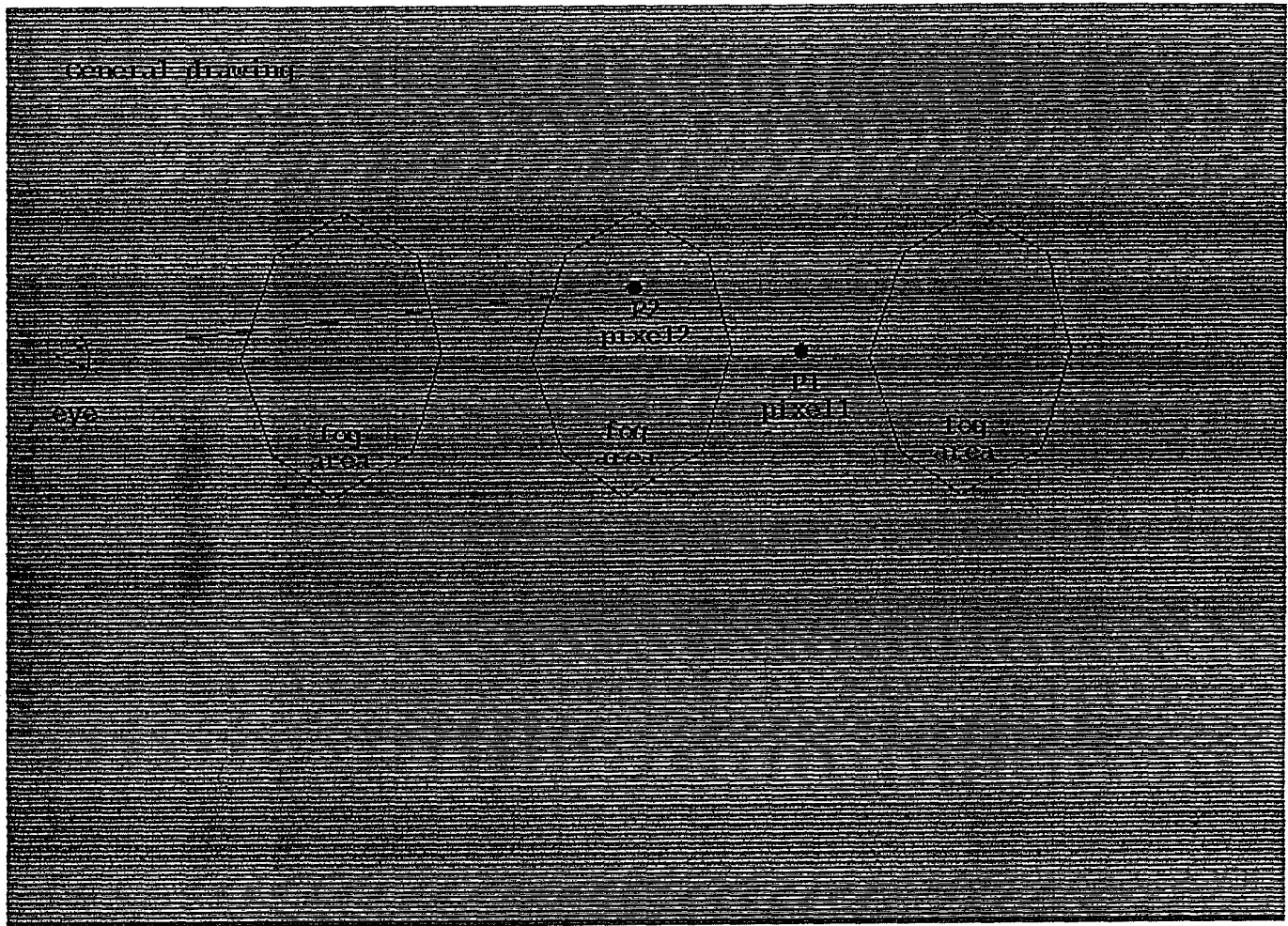


FIG. 13A

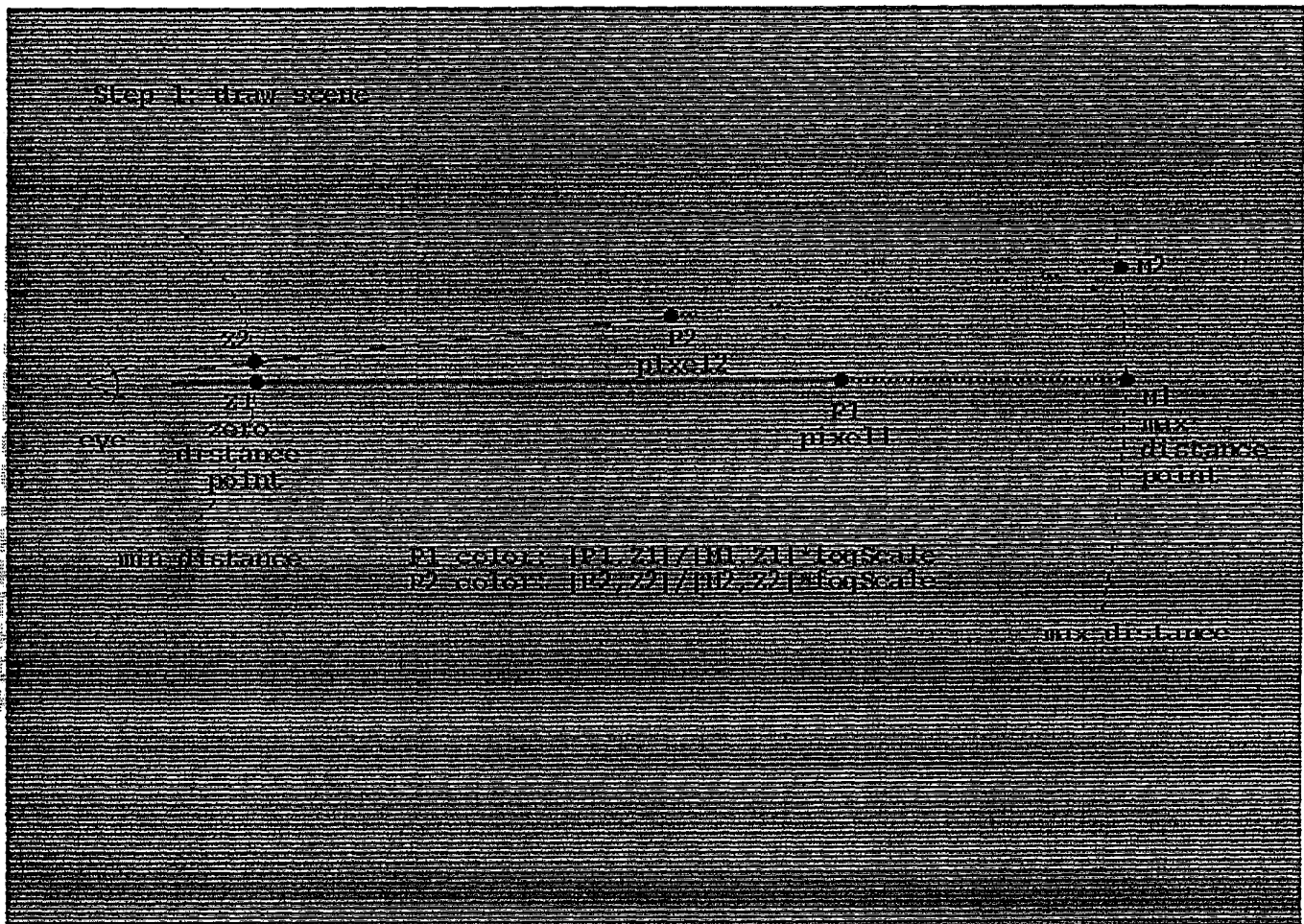


FIG. 13B

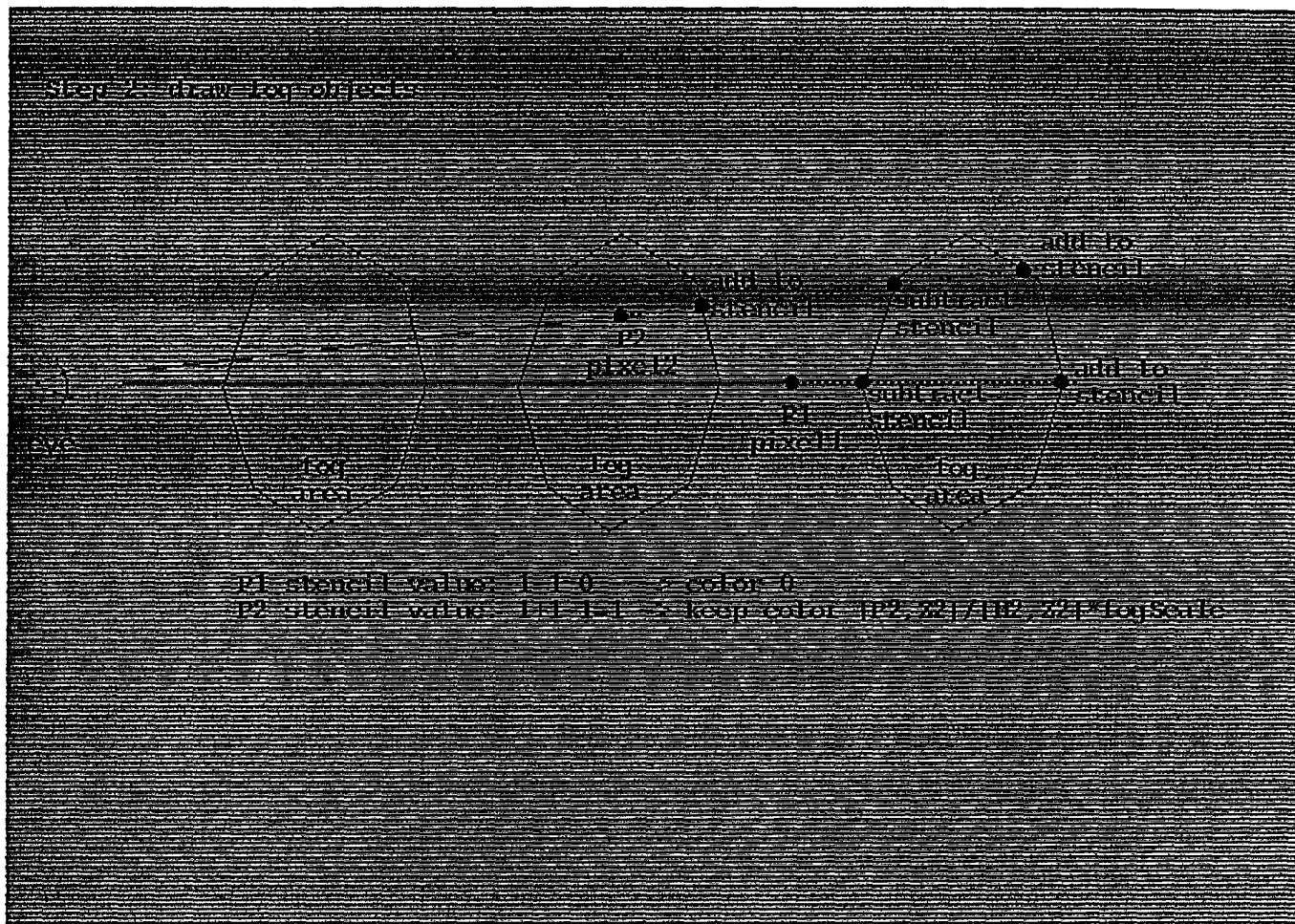


FIG. 13C

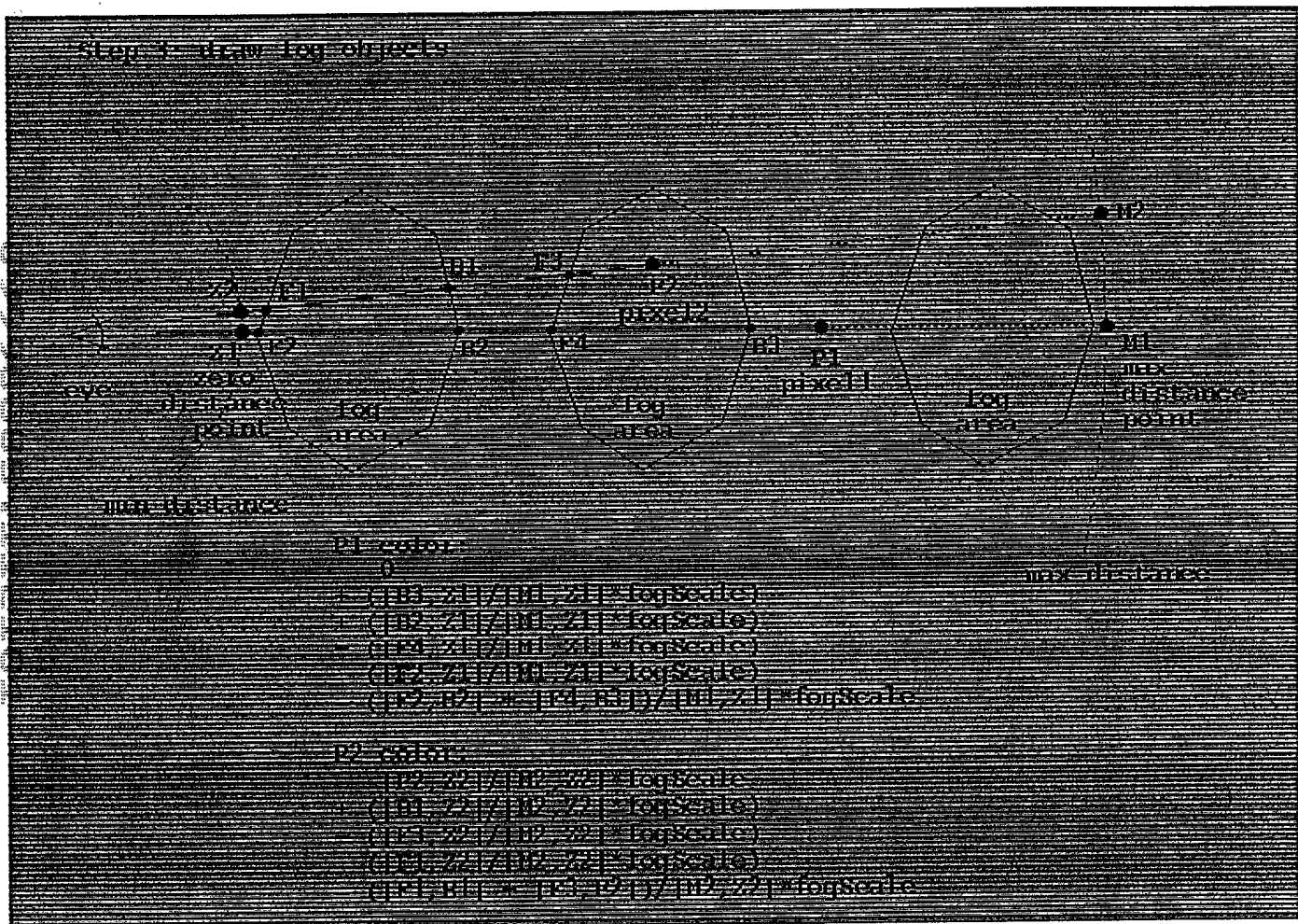
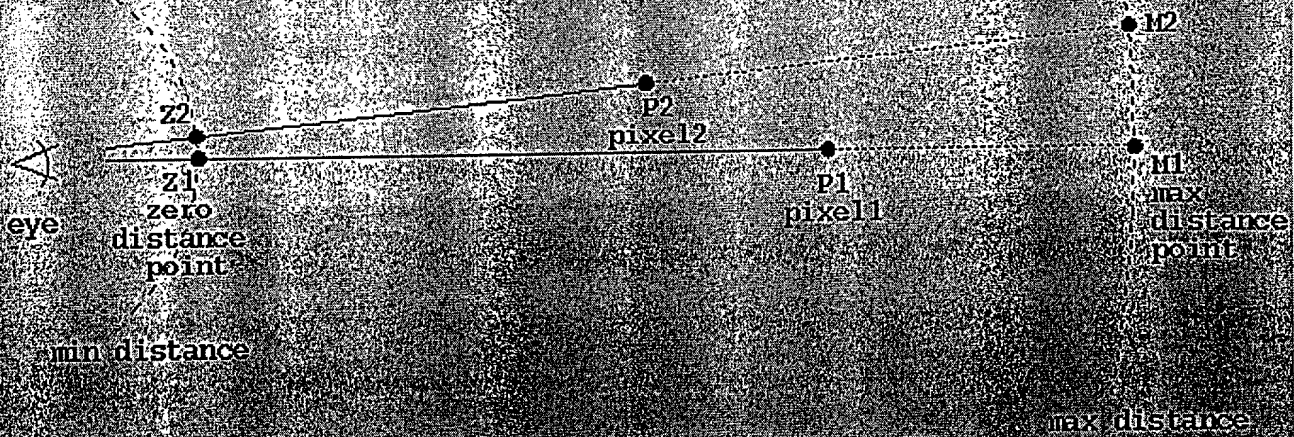


FIG. 13D

Step 4: convert pixel values



$P1_color: P1_color + fogDensity/fogScale * |M1, Z1|$
 $P2_color: P2_color + fogDensity/fogScale * |M2, Z2|$ note $|M1, Z1| = |M2, Z2|$
 (linear fog)

or

$P1_color: pixelmap[P1_color/fogScale * |M1, Z1|]$
 $P2_color: pixelmap[P2_color/fogScale * |M2, Z2|]$
 (exp or exp2 fog)

FIG. 13E

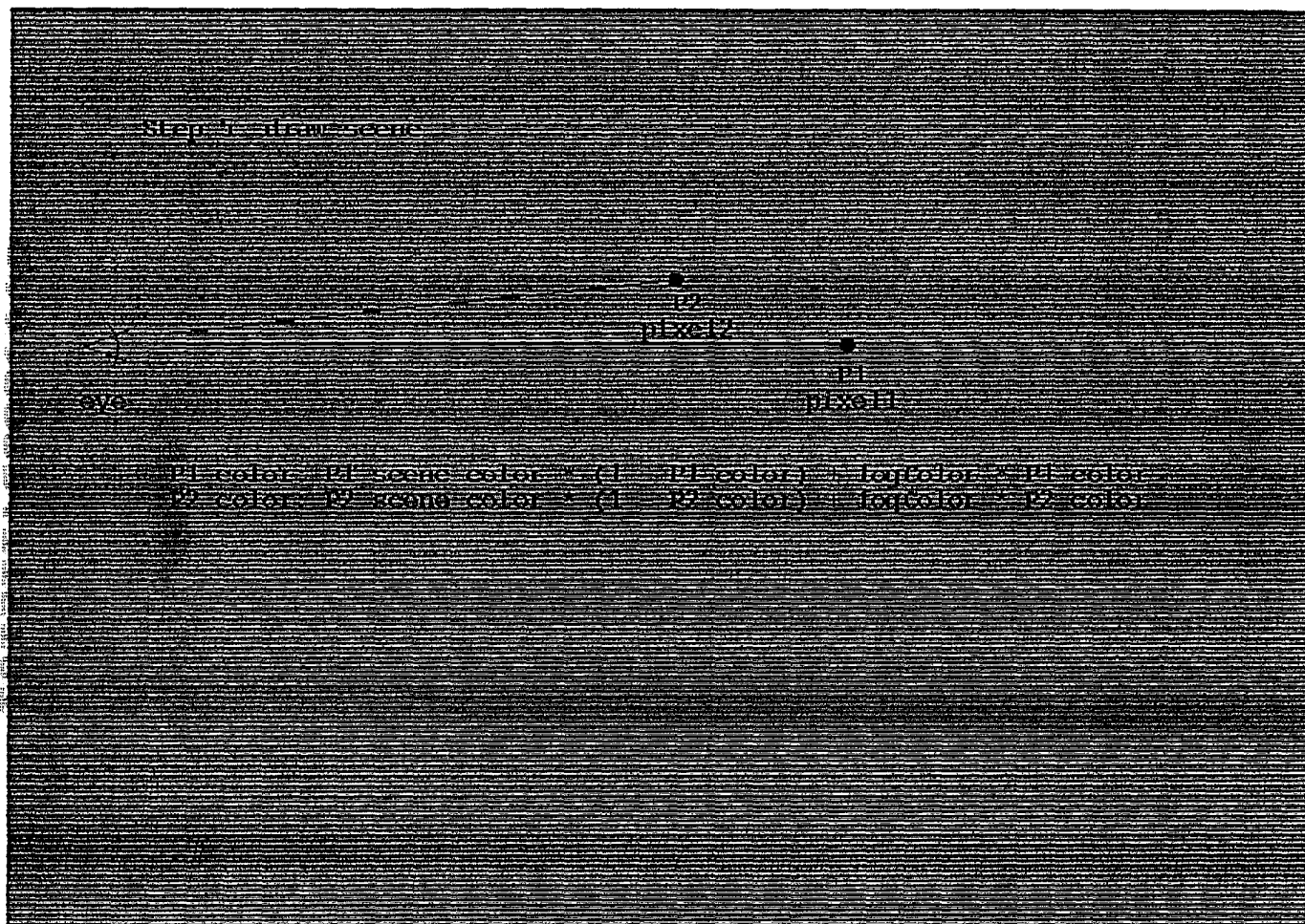


FIG. 13F